

IN THE DRAWINGS

The attached sheets of drawings include changes to Figures 1-3. These sheets, which include Figures 1-3, replace the original sheets including Figures 1-3.

Attachment: 3 Replacement Sheets

REMARKS/ARGUMENTS

Favorable reconsideration of this application, in view of the present amendment and in light of the following discussion, is respectfully requested.

Claims 1-9 are pending. In the present amendment, Claims 1-9 are currently amended. Support for the present amendment can be found in the original specification, for example, at page 3, line 32 to page 4, line 33, at page 5, line 31 to page 7, line 4, in Figures 1-3, and in original Claims 1-9. Thus, it is respectfully submitted that no new matter is added.

In the outstanding Office Action, the drawings were objected to; the specification was objected to; Claim 1 was rejected under 35 U.S.C. § 112, second paragraph; and Claims 1-9 were rejected under 35 U.S.C. § 103(a) as unpatentable over Bradlee (U.S. Patent No. 4,635,458).

Initially, it is noted that the specification and Claim 1 are hereby amended to clarify that $R/E_k \geq R/E_{k+1}$. Applicants respectfully submit that this amendment is consistent with the remainder of the specification and the claims. Specifically, as the radius (R) of the rolls is constant, and the center-to-center spacing either stays the same or increases along the direction of the path of the strip from entry to exit, the center-to-center spacing E_k is equal to or smaller than the center-to-center spacing E_{k+1} . Thus, R/E_k is greater than or equal to R/E_{k+1} .

In response to the objection to the drawings, Figure 1 is hereby amended to show the respective center-to-center spacings E_k , E_x , and E_1 . Support for these center-to-center spacings can be found in the original specification, for example, at page 3, line 32 to page 4, line 2 and at page 4, lines 16-27.

Figure 1 is also hereby amended to show exemplary embodiments of the lower cassette as reference character 2 and the upper cassette as reference character 3. Support for

upper and lower cassettes can be found in the original specification, for example, at page 4, lines 3-6.

Figures 2 and 3 are hereby amended to show proper labels of the axes and a legend to label the data set. Support for amended Figures 2 and 3 can be found in the original specification, for example, at page 8, lines 3-11.

Accordingly, the objection to the drawings listed on pages 2 and 3 is hereby addressed without adding any new matter. Thus, it is respectfully requested that the objection to the drawings be withdrawn.

In response to the objection to the specification, the word “centre” is hereby replaced with “center” and appropriate section headings are added. Accordingly, it is respectfully requested that the objection to the specification be withdrawn.

In response to the rejection of Claim 1 under 35 U.S.C. § 112, second paragraph, Claim 1 is hereby amended to recite “a center-to-center spacing between a first roll of the rolls from the entry of the leveller and a second roll of the rolls from the entry of the leveller being E_1 .” Claim 1 is also hereby amended to recite “a center-to-center spacing between a last roll of the rolls from the entry of the leveller and a next to last roll of the rolls from the entry of the leveller being E_n .” These amendments are consistent with the specification, for example, at page 4, lines 16-27. Thus, it is respectfully submitted that no new matter is added. Further, it is noted that amended Claim 1 no longer recites the term “optionally.” Accordingly, the rejection of Claim 1 as being indefinite is hereby overcome, and no further rejection of that basis is anticipated. However, if the Examiner disagrees, the Examiner is invited to telephone the undersigned who will be happy to work with the Examiner in a joint effort to derive mutually acceptable language.

In response to the rejection under 35 U.S.C. § 103(a), Applicants respectfully request reconsideration of this rejection and traverse this rejection, as discussed below.

Amended Claim 1 recites, in part, a tensionless leveller that comprises $n+1$ motorized rolls each having a constant radius R . The rolls are offset with respect to one another. A distance between the axis of each adjacent roll on different cassettes is referred to as a center-to-center spacing E_k , wherein “ k ” is a variable representing a particular center-to-center spacing (i.e. when $k=1$, the center-to-center spacing is between the first and second rolls from the entry of the leveller and, when $k=n$, the center-to-center spacing is between the next-to-last and last rolls). Accordingly, the center-to-center spacing between the rolls is defined as follows:

for k from 2 to 4, $R/E_k = R/E_1$;

for k from $n-3$ to n , $R/E_k = R/E_n$ and $R/E_n < R/E_1$; and

for k from 5 to $n-1$, $R/E_n \leq R/E_k \leq R/E_1$, and $R/E_k \geq R/E_{k+1}$.

Thus, for each progressive center-to-center spacing from the entry to the exit of the leveller, the center-to-center spacing will stay the same or increase. Specifically, the first four center-to-center spacings are the same. Further, a center-to-center spacing between the first and second rolls (E_1) is less than a center-to-center spacing between the next-to-last and last rolls (E_n). Accordingly, by having varying distances between the rolls, the force exerted on the rolls can be reduced, the number of operating points can be increased, and a degree of flatness of the strip is increased.¹ It is respectfully submitted that the cited references do not disclose or suggest every feature recited in amended Claim 1.

Bradlee describes a leveling apparatus that includes lower work rolls 58 and upper work rolls 78 that oppose the lower work rolls 58.² Further, Bradlee describes that the upper work rolls 78 are attached to support members 70 which can pivot with respect to a mounting plate 60 so that the upper work rolls 78 can be adjusted vertically relative to the lower work

¹ See the original specification, for example, at page 5, lines 1-13

² See Bradlee, at column 5, lines 37, 38, and 55-57 and in Figure 1.

rolls 58.³ The Office Action, in the second paragraph on page 7, acknowledges that Bradlee does not disclose or suggest the claimed center-to-center spacing ratios. Instead, the Office Action takes the position that the claimed center-to-center spacing ratios would have been obvious to a person of ordinary skill in the art.

However, it is respectfully submitted that Bradlee does not disclose or suggest “an axis of each of the rolls of one of the lower or the upper cassette being separated from an axis of an immediately successive roll of the other of the lower or the upper cassette by a center-to-center spacing E_k , in which: for k from 2 to 4, $R/E_k = R/E_1$; for k from $n-3$ to n , $R/E_k = R/E_n$ and $R/E_n < R/E_1$; and for k from 5 to $n-1$, $R/E_n \leq R/E_k \leq R/E_1$, and $R/E_k \geq R/E_{k+1}$,” as recited in amended Claim 1.

Instead, it is respectfully submitted that the upper and lower rolls 78 and 58 of Bradlee could not be positioned to have the claimed spacing ratios. As can be seen in Figure 4 of Bradlee, even if the support members 70 are pivoted with respect to a mounting plate 60, the rolls 78 and 58 could not be positioned such that the first four center-to-center spacings are the same and that the last center-to-center spacing is greater than the first four center-to-center spacings. Instead, if the support members 70 are positioned such that the first four center-to-center spacings are all equal, then the last center-to-center spacing would also have to be equal. Additionally, if the support members 70 are positioned such that the first center-to-center spacing is less than the last center-to-center spacing, then the first four center-to-center spacings could not be equal.

Accordingly, even though the Office Action takes the position that routine experimentation with the leveling apparatus described in Bradlee would result in the claimed center-to-center spacings, it is respectfully submitted that the Bradlee apparatus could not be

³ See Bradlee, at column 6, lines 10-13, at column 6, line 42 to column 7, line 2, and in Figures 1 and 4.

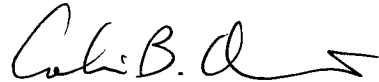
adjusted to achieve the claimed spacings. Thus, a person of ordinary skill in the art would not discover the claimed ranges using the apparatus described in Bradlee.

Therefore, it is respectfully submitted that a *prima facie* case of obviousness has not been made with respect to Claim 1. Thus, it is respectfully requested that the rejection of Claim 1, and all claims dependent thereon, as unpatentable over Bradlee be withdrawn.

Consequently, in view of the present amendment, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal allowance. A Notice of Allowance is earnestly solicited.

Respectfully submitted,

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